73. So also in firewood, and worthless scrub-jungle much good can be effected by guards in planting or sowing inferior species in the more open parts and superior species in suitable places where the cover is denser. A beginning in this direction has been made by the officers in the Central Division of Kánara, and in Dhárwár, Bijápur and Ratnágiri. In future greater attention will, I hope, be paid to the subject in other divisions.

COMMUNICATIONS AND BUILDINGS.

74. The amount expended on "roads and bridges" was Rs. 1,973, on "buildings" Rs. 4,280 and on "other works" Rs. 486.

75. In the Northern Division of Kánara certain forest cart-tracks were repaired (Rs. 71-11-0); 2 new watch-houses were built (Rs. 600) and the range office at Supa was completed (Rs. 199).

76. In the Central Division of Kánara the Kánnigéri-Udámáki and Hittálkárgadde-Mágód roads were repaired (Rs. 525) and two new watch-houses were built (Rs. 600).

77. In the Southern Division of Kánara the roads between Manchikéri and the Singanhalli Depôt, and between Kátur and Umachgi were repaired (Rs. 434). A new watch-house was built at Gersappa (Rs. 300), and a building for the Divisional Forest Office at Sirsi (Rs. 950).

78. In Belgaum, the Nágargáli-Halshi forest road was repaired (Rs. 915) and a new *náká*-house was built at Gokák (Rs. 188-12-0).

79. In Dhárwár, a *náká*-house was built at Kalkundi (Rs. 300), and the rest-house at Devikop was repaired (Rs. 200).

80. In Ratnágiri, the Bánd-road was put in repair as usual (Rs. 25-2-0).

81. It may perhaps appear to any one unacquainted with the district that communications are neglected in the Southern Circle. This is, however, not the case. With the exception of Kolába and Ratnágiri, where creeks and rivers take the place of roads to a very great extent, the whole of the forest area is extremely well provided with roads, for the repairs of which large quantities of wood are given free every year from the forests. Even the proposed line of railway to Pótóli will not open up forests hitherto unexplored, but will run for its whole length (21 miles) through forests which have been worked for many years by means of carts. If it is to open up forests to the market above-ghát, it will have to be taken 15 or 20 miles further, across the Káneri-river to Gund.

82. The survey of a line for the proposed forest railway which is intended to tap the forests between Nágargáli, on the Southern Marátha Railway, and Gund, was carried as far as Pótóli. Pótóli is about 21 miles from its junction with the existing railway, and Gund about 40 miles. The rough estimate of the yield of the tract traversed by the proposed line will be submitted in a few weeks.

CHAPTER IV.

YIELD AND WORKING.

83. The following shows the yield of the forests of the several divisions of the Southern Circle for the two years of 1887-88 and 1888-89 :—

Description of Produce.	1887-88.		1888-89.	
	Number.	Cubic feet.	Number.	Cubic feet.
Teak	...	256,596	...	250,576
Do. poles	10,788	...	23,028	...
Do. pieces for sleepers ...	46,164	...	17,319	...
Do. adzed sleepers	2,009	...	90	...
Thinnings from teak trees ...	...	...	Stacks 13	...
Blackwood	...	7,999	...	18,246

	Description of Produce.		1887-88.		1888-89.	
			Number.	Cubic feet.	Number.	Cubic feet.
Northern, Central, and Southern Divisions of Kánara	Blackwood poles	...	...	...	5	...
	Do. pieces	...	...	...	4	...
	Do. plants	...	1	...	16	...
	Junglewood	...	...	397,605	...	314,090
	Do. poles	...	7,313	...	2,529	...
	Do. rafters	...	...	...	1,496	...
	Do. pieces	...	...	...	687	...
	Do. stakes	...	...	...	635	...
	Gayaliwood	...	100	...	...	...
	Mango trees	...	2	...	...	...
	Baini trees	...	390	...	391	...
	Savri or Moi trees	...	...	...	242	...
	Palmyra trees	...	111	...	117	...
	Heart of palm	... Loads.	85	...	112	...
	Jarúitiwood logs	...	...	...	320	...
	Do. pieces	...	1,089	...	1,358	...
	Do. stacks	...	153	...	44	...
	Firewood ...	...	...	1,062,965	...	1,499,793
	Do. ...	... Tons.	21,777	...	8,693	...
	Do. ...	... Maunds.	...	...	2,349	...
	Do. ...	... Stacks.	635	...	539	...
	Do. ...	... Cart-loads.	7,904	...	6,629	...
	Do. ...	...Head-loads.	193,473	...	156,424	...
	Charcoal ...	... Maunds.	332	...	304	...
	Do. ...	... Sacks.	...	...	215	...
	Bámbus ...	... ..	4,197,415	...	3,853,316	...
	Do. small	... ...	3,200	...	775,325	...
	Sandalwood	... Khandis.	111-6-9	...	73	...
	Do. roots and pieces	...	...	...	2,168	...
	Do. white wood chips	...Bags.	12	...	26	...
	Do. trees	... ..	...	...	189	...
	Grass ...	... Bundles.	78,900	...	51,530	...
	Thorns ...	... Carts.	11	...	24	...
	Props for fencing	... ...	214	...	...	...
	Myrobolans	... Khandis.	3,987	...	4,356	...
	Shigekai ...	... Do.	125	...	15	...
			Khandis	...	Maunds	...
	Do. bark	... ...	900-66	...	2,534	...
	Ratan ...	Head-loads.	709	...	...	...
	Cane ...	... ...	...	...	535	...
	Creepers for baskets	... Do.	142	...	...	...
	Reeds ...	... ...	34,450	...	10,500	...
	Karvi ...	...Head-loads.	587	...	2,480	...
	Hadchari leaves	... Do.	53	...	29	...
	Earth ...	... ...	...	...	...	7,350
	Do. ...	... Cart-loads.	92	...	69	...
	Stones ...	... ...	...	...	...	12,050
Belgaum Division.	Teak logs ...	... ...	...	203	...	...
	Do. poles and pieces	...	...	39,950	...	19,846
	Branch wood from above	...	2,596	...	310	1,533
	Slabs ...	... ...	2,335	...	75	...
	Blackwood logs	... ...	244	...	351	...
	Do. poles	... ...	66	...	63	...
	Junglewood logs	... ...	...	11,278	...	2,040
	Do. poles and rafters	...	...	21,037	...	12,797
	Bábul trees	... ...	...	750	...	629
	Samplewood	... ...	...	5,440	...	...
	Agricultural implements	...	9	...	...	...
	Firewood (running fuel)	...	...	2,893,020	...	1,657,094
	Do. lighting wood	...	...	2,000	...	131,740
	Do. ...	... Stacks.	...	3,901,600	...	679,450
	Do. ...	... Cart-loads.	4,449	...	3,320	132,800
	Do. ...	...Cattle-loads.	721	...	536	1,072
	Do. ...	... Head-loads	115,633	...	127,628	382,884

	Description of Produce.	1887-88.		1888-89.	
		Number.	Cubic feet.	Number.	Cubic feet.
Belgaum Division—*continued.*	Charcoal ... ... Maunds.	532	...	144	...
	Bámbus	44,909	...	59,753	...
	Do. small	614,007	...	504,646	...
	Sandalwood...	...	20	...	...
	Do. pieces	...	20	...	30
	Grass ... ... Bundles.	415	...	623	...
	Toddy trees, sale of	4	...	18	...
	Do. tapping fees on ...	61	...	115	...
	Myrobolans... ... Khandis.	6,923	...	6,655	...
	Shigekai ... ... Do.	300	...	760	...
	Cinnamon ... ... Maunds.	400	...	2,140	...
	Tamarind ... ... Do.	546	...	102	...
	Gum ... ... Do.	1,050	...	292	...
	Honey ... ... Do.	108	...	291	...
	Coffee ... ... Seers.	10	...	6	...
	Castor-oil seeds ... Do.	...	...	12	...
	Ratan ... ...Head-loads	148	...	241	...
	Banadurgi leaves ... Do.	83	...	310	...
	Karvi ... ... Cart-loads.	228	...	173	...
	Tarwad bark ... Do.	...	...	3	...
	Do. Animal-loads.	132	...	137	...
	Do. ...Head-loads.	503	...	806	...
	Thorns ... ... Cart-loads.	90	...	88	...
	Do. ... Animal-loads.	115	...	93	...
	Do. ... ...Head-loads.	279	...	1,655	...
	Earth ... ...Cattle-loads	...	...	1,352	...
	Do. ... ... Baskets.	21	...	41	...
	Stones	...	1,019,536	...	204,757
	Do. ... ... Cart-loads.	8,497	...	10,031	...
	Do. ... ...Cattle-loads	3,983	...	5,188	...
Dhárwár Division.	Teak rafters	13,570	...	7,718	...
	Junglewood rafters	1,516	...	896	...
	Jaráitiwood do.	21,401	...	18,442	...
	Sleepers	32	...	32	...
	Do. unsound pieces	37	...	...	...
	Do. slabs	11	...	...	...
	Ulkas	1,000	...	...	...
	Firewood ... ... Stacks.	10,982	...	11,394	...
	Do. ... ... Cart-loads.	224	...	285	...
	Do. ... Animal-loads.	2,583	...	1,740	...
	Do. ... ...Head-loads.	18,274	...	21,819	...
	Bámbus	321,709	...	5,60,341	...
	Do. pieces	...	...	7,424	...
	Do. ... ... Cart-loads.	11	...	164	...
	Sandalwood... ... Billets.	2,148	...	1,022	...
	Do. pieces	38	...	90	...
	Do. chips and saw-dust. Maunds.	7	...	11	...
	Grass ... ... Loads.	...	...	111	...
	Do. ... ... Pullies.	3,805	...	8,519	...
	Hirda ... ... Khandis.	5-15-19	...	3¼	...
	Thorns ... ... Loads.	2,076	...	1,875	...
	Earth ... ... Do.	16	...	100	...
	Stones ... ... Do.	4,419	...	1,917	...
Bijápur Division.	Timber ... ... Pieces.	20	...	7	...
	Do. Jantis ...Head-loads.	4,189	...	7,265	...
	Firewood ... ... Cart-loads.	2,542	...	3,026	...
	Do. ... Animal-loads.	16,615	...	32,051	...
	Do. ... ...Head-loads.	94,903	...	77,176	...
	Do. ... ... Pieces.	20	...	150	...
	Leaves ... Animal-loads.	131	...	6	...
	Do. ... ...Head-loads.	2,316	...	6,220	...
	Tarwad bark Animal-loads.	298	...	400	...
	Do. ... ...Head-loads.	672	...	650	...

	Description of Produce.		1887-88. Number.	1887-88. Cubic feet.	1888-89. Number.	1888-89. Cubic feet.
	Thorns ...	... Stacks.	678	...	450	...
	Do. ...	...Head-loads.	389	...	500	...
	Stones ...	... ...	...	259,716	...	127,017
	Do. ...	... Cart-loads.	28,962	...	2,165	...
	Do. ...	Animal-loads.	1,384	...	5,800	...
	Do. ...	...Head-loads.	1,872	...	36,291	...
	Earth ...	... Cart-loads.	550	...	825	...
	Do. ...	Animal-loads.	5,303	...	5,667	...
	Do. ...	...Head-loads.	2,972	...	44	...
Kolába Division.	Teak trees	...	116,136	...	100,905	...
	Do. beams ...	...	790	...	401	...
	Do. 1st class ...	...	3,674	...	2,138	...
	Do. 2nd do. ...	...	4,951	...	5,062	...
	Do. 3rd do. ...	...	6,753	...	6,928	...
	Do. 4th do. ...	...	3,688	...	3,477	...
	Miscellaneous ...	...	5,678	...	6,425	...
	Do. pieces ...	...	2,488	...	300	...
	Firewood Kowl Khandis	...	27,000	...	23,000	...
Ratnágiri Division.	Teak beams and sotas ...	...	1,115	...	1,342	...
	Do. poles, 1st class ...	...	3,687	...	2,869	...
	Do. 2nd do. ...	...	5,072	...	3,828	...
	Do. 3rd do. ...	...	5,199	...	6,950	...
	Do. 4th do. ...	...	2,929	...	5,284	...
	Firewood	Khandis.	422	...	550	...
	Myrobolans... ...	Maunds.	42	...	34	...

84. The order of Government to show all quantities in the statements in cubic feet arrived too late to enable me to render the past year's account in the desired form.

NORTHERN, CENTRAL AND SOUTHERN DIVISIONS OF KA'NARA.

85. The large teak exploited was 6,020 cubic feet less than during the previous year, and the quantity of large junglewood exploited fell off to the extent of 83,515. A greater quantity of dead wood was brought in, but no contracts for cutting girdled wood were given out as there was a sufficient surplus of the previous year in stock to make up the proposed yield; hence the decrease in the quantity brought in.

86. The number of teak-poles exploited was greater by 12,240 and the yield of blackwood was greater by 10,247 cubic feet.

87. The outturn of teak-pieces for sleepers fell off to the extent of 30,764, the demand for sleepers by the Southern Marátha Railway Company being now very limited.

88. The yield of sandalwood-timber in the Central and Southern Divisions was less than the quantity brought in during 1887-88 by 38 khandis, but 2,168 roots and small pieces in those divisions and 189 trees in the Northern Division were brought in.

89. The firewood exploited was almost equal to the previous year's. The myrobolan-collection shows an increase of 369 khandis, while shigekai was less by 110 khandis.

90. Of large and small bámbus 428,026 more stems were extracted during the year than in the previous one. The increased consumption can only be ascribed to the facility for export afforded by the new railway.

BELGAUM.

91. The quantity of running fuel extracted for the Southern Marátha Railway-Company shows a decrease of 1,235,926 cubic feet. It was 1,657,094 cubic feet against 2,893,020 in 1887-88, but the lighting fuel brought in for the Company was more by 129,740 cubic feet. The decrease in the former item appears to be entirely due to the great difficulty experienced in obtaining transport.

92. The annual requirements of the line are estimated at 45,000 tons or over 3,000,000 cubic feet by the Locomotive Department. Last year's production amounted to 24,000 tons. Mr. Murray reports that "the cause of the collapse was the difficulty of obtaining transport from the forest to the depôts. In order to supply the required amount of fuel, at least 250 carts must be daily employed in carrying the wood, and, as no grass, nor fodder, of any kind is obtainable on the spot, at least 40 or 50 more are required for bringing supplies from elsewhere. It is not at all an easy matter to collect so many carts out in the jungle, nor, when collected, to keep them together. A sudden epidemic of jungle-fever causes a panic, or one of the constantly-recurring native festivals intervenes, and away go the cartmen for a week or two at a time."

"The lead from the forest to the railway was much greater than in the preceding year and will go on increasing year by year, necessarily involving the employment of more and more carts."

93. To meet this difficulty, proposals for a 24-inch tramway, to be worked by bullocks, were submitted in October, 1888. But Government thought that the work should be carried out by the Railway-Company, and referred the question to the Agent. Since then I have heard nothing more of the project officially, but have reason to believe that the Railway authorities are unwilling to undertake the work, their estimate of the cost being very high owing to their desire to have the standard gauge and to effect the haulage by means of locomotives.

94. Unless transport by means of rails be substituted for the present mode of exploitation, it will hardly be possible to get out more than 30,000 tons annually and, apart from any other advantages derivable from a tramway, Government will, if expenses be taken at the present rate, lose Rs. 30,000 a year, net, on account of our inability to get out the present estimated requirements of the line, which are sure to increase. There does not appear to be the slightest likelihood of coal supplanting wood-fuel, which, at the present rate of Rs. 4 per ton, is very much cheaper to use than English or native coal.

95. There is a falling-off in the number of firewood stacks exploited for local consumption, the demand having been partly met from what remained of the previous year's cuttings.

96. The yield of myrobolans was about equal to the previous year's. But little teak-timber was exploited during the year, and there was a decrease in the yield of junglewood-logs, poles and rafters from the clean cuttings of the firewood-coupes—always variable quantities. The number of large bámbus extracted shows an increase.

DHA'RWA'R.

97. The yield of teak and junglewood was much less; but a larger quantity of firewood for local use was collected, and 238,632 more bámbus were removed during 1888-89.

BIJA'PUR.

98. In Bijápur the following increases are noticeable: 3,066 head-loads of jantis, 482 cart-loads and 15,436 animal-loads, of firewood; also 102 animal-loads of *tarwad*-bark.

KOLA'BA.

99. The falling-off in the number of teak-poles cut amounted to 16,334. 100,905 trees were removed by contractors, and 24,431 by Government-agency,

the whole number consisting of coppice-stems. The quantity of fuel removed for export was 4,000 kowl khandis less than in 1887-88 owing to a falling-off in the demand.

RATNÁGIRI.

100. The yield of this division calls for no remarks. The forests are poor and require rest.

101. The Kánara saw-machinery worked in all 293 days, or 3 days less than in 1887-88. The number of logs cut up was :—

	1887-88.		1888-89.	
	Logs.	C. feet.	Logs.	C. feet.
Teak ...	... 1,419	= 27,279	2,165	= 46,787
Blackwood ...	5	= 37	3	= 49
Junglewood ...	184	= 3,269	337	= 8,118

and the outturn of clean timber was :—

	1887-88.		1888-89.	
Teak logs ...	...14,790 c. ft.	16,390	23,857 c. ft.	25,188
Reconverted from stock ...	1,600 ,,		1,331 ,,	
Blackwood ...	...	23	...	14
Junglewood ...	...	1,347	...	2,191
Sleepers ...	...	1,306	...	1,604

102. The receipts at the mills amounted to Rs. 47,942 and the expenditure to Rs. 15,199. In 1887-88 the receipts were Rs. 33,077 and the expenditure Rs. 11,159.

103. The increase in the outturn of teak and junglewood, as well as the increase in receipts and expenditure, was owing to a large order from the Southern Marátha Spinning and Weaving Company at Hubli, and to one from the Kolhápur-State for sleepers and scantlings for the Kolhápur-Railway.

104. The permission of Government was obtained during the year to sell the saw-machinery, there being no probability of our being able to work it at a profit. The workshops were therefore closed in June last and the machinery was advertised for sale. As yet no portion of it has been disposed of.

105. In their last review of forest administration in this Presidency the Government of India expressed a wish to have a more detailed description of the modes of exploitation adopted. In Chapter IV. of last year's report, I described the agency employed in exploiting the forests and to some extent the mode of exploitation. The methods employed are jardinage for seedling-forests or other timber-forests, and clean cuttings for firewood-forests. As far as possible, the method of equal areas is being introduced in firewood-forests, but it is not possible to cut over equal areas annually in the case of forests which have to supply a certain quantity of material, such as those which supply the Southern Marátha Railway with fuel. The more eastern forests, which consist cheifly of small and more or less thorny scrub, and some of the better descriptions of forest, too, are exploited on the permit-system, and the people cut and fetch out the wood for sale on payment of a small fee of one anna or less per head-load. This system is no doubt a bad one for the forests, but it is difficult to deprive the people engaged in the trade of a means of livelihood to which they have always been accustomed. Blocks are opened and closed periodically for the exercise of the privilege, but it is quite impossible to protect other parts of the forest traversed by the wood-cutters, or to prevent the cutting of green wood, or the manufacturing of dead-wood. Whenever firewood-cuttings on the principle of clean-cuttings can be advantageously made, people who remove wood by head-loads are obliged to take them from such cuttings.